

## U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

## SOUTH CAROLINA SECTION.

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No. 7.

## GENERAL SUMMARY.

July was a remarkably stormy month, with rainfall far in excess of any previous record in the history of South Carolina. Temperatures ranged considerably below the seasonal average, and the mean for the Section was close to the lowest July average. Persistent showery weather culminated in the enormous rainfall that attended the South Atlantic hurricane that passed over the Section between the 13th and 15th, and, as a result, the Santee River System experienced the most extended and disastrous floods in its history. While the winds accompanying the disturbance were not extraordinarily high, the force was such that crops in immense areas were beaten flat into soggy ground, resulting in extensive losses. General crop deterioration set in after the first decade, due to continuous wet, cloudy weather, rapid accumulation of grass, and inability of planters to cultivate the soil. The situation was considerably better in the western portion, toward the Savannah River, where the rainfall was neither so heavy nor so prolonged. However, the early corn crop was practically made during the month, and forage peas, cane, sweet potatoes, and pastures grew luxuriantly. At the close of the month, cotton was not fruiting well and had begun to shed, and in some parts chopping had not been completed.

## PRESSURE.

The mean sea-level pressure, determined from reports of 7 regular Weather Bureau stations in and surrounding the Section, was 30.00 inches. The highest pressure in the region covered by reports was 30.27 inches at Asheville, N. C., on the 30th, and in the Section proper, 30.26 inches at Columbia on the same date; lowest pressure, 29.02 at Charleston on the 14th, as the destructive south Atlantic hurricane passed inland toward the north.

## TEMPERATURE.

The monthly mean for the Section, determined from reports of 42 stations, was  $77.8^{\circ}$ , or  $2.1^{\circ}$  below the established normal and but 0.1 degree above the mean of the cool July of 1894. The highest temperature was  $99^{\circ}$  at Newberry, Newberry County, on the 3rd. The warmest period was generally between the 1st and 4th over the western portion, and local maximum temperatures occurred on various dates in the remainder of the Section. The lowest temperature was  $60^{\circ}$  at Cheraw on the 6th and at Winthrop College on the 27th. The coolest period of the month was generally during the first decade.

## HUMIDITY.

The mean relative humidity, determined from reports of 7 regular Weather Bureau stations in and surrounding the Section, was as follows: 8 a. m., 87%; 8 p. m., 81%. The highest percentages occurred over the northern and eastern counties, and the lowest, in a narrow belt extending from the Congaree watershed to the middle coast.

## PRECIPITATION.

The average for the Section, 56 stations reporting, was 14.69 inches, or 8.87 inches above the established normal and 2.24 inches above the previous highest monthly average since State-wide observations were begun, namely: that of August, 1893. Copious showers to excessive rains occurred in some part of the

western portion every day, while there were but two short dry periods in the eastern portion during the month. Veritable deluges occurred over the eastern and extreme northern counties, where the monthly amounts ranged from 15 to over 31 inches; over the western part of the Section toward the Savannah watershed the amounts ranged from 10 to below 6 inches. A very large proportion of this enormous rainfall was developed during the passage of the south Atlantic hurricane that approached the Carolina coast on the 13th, passed northwestward over the State on the 14th, and disappeared over the lower Appalachians by the 16th. Unprecedentedly heavy rains fell in the region from Berkeley, east Charleston, and Georgetown counties northward, where 10 to over 18 inches were measured on the 14th and 15th. During the period, 14th to 18th, the entire eastern portion of the Section was drenched with rainfall ranging from 5 to nearly 17 inches. The greatest local monthly amount was 31.13 inches at Kingtree, Williamsburg County, breaking the previous highest record at Charleston in August, 1885, by 11.95 inches; least monthly amount, 5.73 inches at Edgefield, Edgefield County. The greatest amount during any 24 hours was 13.25 inches at Effingham, Florence County, on the 14th and 15th, or 1.60 inches above the previous highest 24-hour record of August, 1908, at Anderson, Anderson County. The average number of rainy days was 55% above the normal.

## WIND.

The prevailing winds were from the southwest. The average hourly velocity, determined from 7 anemometer records, was 8.3 miles. The highest average velocity in the region covered by reports was 11.2 miles per hour at Charleston; lowest average, 5.7 miles per hour at Augusta, Ga., and in the Section proper, 6.7 miles per hour at Columbia. The highest velocity for any 5-minute period was 64 miles per hour from the north at Charleston on the 14th, the highest recorded velocity during the south Atlantic hurricane that passed inland on that date.

## SUNSHINE AND CLOUDINESS.

The average monthly sunshine determined from 7 automatic records, was 194.6 hours, or 44% of the possible amount and much below the seasonal average. The amount of cloudiness exceeds all previous records for July, except that of 1906. The number of clear days was 5; partly cloudy, 12; and cloudy, 14; as against normals of 12, 12, and 7 days, respectively.

## RIVER CONDITIONS.

Heavy rains over the upper reaches of the Santee System on the 9th and 10th were followed by moderate floods in the Saluda, lower Catawba, Wateree, and upper Santee rivers between the 11th and 15th.

The enormous downpours of rain attending the south Atlantic hurricane during its passage over the State between the 13th and 15th, together with extraordinary rainfall over the drainage areas of the Saluda, Broad, and Catawba rivers in North Carolina up to the 18th, created a situation favorable for the most extensive and destructive floods in the history of the Santee System, authentic records being available as far back as 1840. During the period, 14th to 18th, the rainfall in the Broad and Catawba watersheds along the immediate Appalachian slope ranged from 10 to over 24 inches, and near the northern edge of McDowell County, N. C., an enormous downpour of over 19 inches was recorded on the 16th. The runoff was consequently attended by a river stage at Mt. Holly, N. C., that was nearly twice the height of the 1901 record, 12 feet above the Catawba record for 1908, over 3 feet above the Wateree record at Camden for 1908, 2 feet above the Santee record of 1908 at Rimini, and 1 foot above the 1908 record at Ferguson. Compared with the floods of 1908, when all the rivers were in high flood, the (Continued on Page 56.)

## Climatological Data for July, 1916.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahr.						Precipitation, in inches.						Number of days.	Prevailing direction of wind.	Observers.		
				Mean.			Departure from the normal.			Total.			Departure from the normal.			Total snowfall, unmeted.				
				Highest.	Date.	Lowest.	Greatest daily range.	Date.	Greatest daily range.	Total.	Greatest in 24 hours.	Total.	Greatest in 24 hours.	Total.	With precipitation (0.01 in. or more)	Clear.	Partly cloudy.	Cloudy.		
<i>Eastern Portion.</i>																				
Allendale .....	Barnwell .....	186	27	79.6	-1.7	94	+ 3	69	+ 2	24	13.75	+ 8.24	3.11	0	16	3	12	s.	R. B. Vance,	
Beaufort .....	Beaufort .....	21	29																Miss Lillian H. Rice.	
Blackville .....	Barnwell .....	296	27	79.2	-2.5	96	-19	67	+ 2	27	13.63	+ 8.31	2.00	0	21	5	15	11	Mrs. D. B. Sanders.	
Bowman .....	Orangeburg .....	160	15	78.2	-2.2	93	-4	65	-1	30	14.88	+ 9.34	2.76	0	17	13	6	12	B. O. Evans,	
Centenary .....	Marion .....	43	1	78.6		93	+ 2	63	8	29	16.23		6.75	0	18	1	17	13	D. L. Carmichael.	
Charleston .....	Charleston .....	48	45	79.1	-2.2	93	-20	68	-13	19	11.61	+ 4.35	4.19	0	16	6	11	14	s. U. S. Weather Bureau.	
Cheraw .....	Chesterfield .....	144	26	77.4	-2.5	92	-11	60	6	24	15.87	+ 10.09	9.38	0	18				J. H. Powe,	
Conway .....	Horry .....	25	30	77.0	-3.1	90	-28	65	8	20	13.23	+ 6.74	2.60	0	14	5	1	25	Paul Quattlebaum.	
Darlington .....	Darlington .....	175	21	78.2	-1.8	94	-13	64	6	24	19.83	+ 15.00	10.10	0	17	1	11	19	D. C. McCall.	
Dillon .....	Dillon .....	100	13	78.4	-1.8	92	-11	64	8	25	13.79	+ 8.08	7.60	0	16				A. E. Rowell.	
Edisto II .....	Bamberg .....	143	28								14.41	+ 8.77	2.20	0	19				Nathan Jenkins.	
Evingham .....	Florence .....	106	23								24.95	+ 20.47	13.25	0	18				H. B. McCall.	
Ferguson .....	Orangeburg .....	63	30	78.2	-1.2	91	+ 12	P72	+ 3	P18	27.33	+ 21.41	7.52	0	16				Joseph P. Simons.	
Florence I .....	Florence .....	136	27	78.8	-2.6	97	-4	63	8	29	18.05	+ 12.80	9.15	0	20	5	18	8	H. K. Gilbert.	
Florence 2 .....	do .....	136	1								20.27	+ 15.02	11.05	0	12	2	21	8	Fee Dee Experiment Sta.	
Georgetown .....	Georgetown .....	12	21	*80.5	-0.1	*94	+ 20	*67	+ 7	*33	20.25	+ 13.30	4.75	0	14	6	21	4	s. A. P. Hazard.	
Kingtree .....	Williamsburg .....	54	27	79.4	-1.2	94	-4	66	7	24	31.13	+ 25.52	12.60	0	18	12	4	15	A. O. Matthews.	
Mayesville (near) .....	Sunter .....	70	1	78.6		96	-20	66	7	27	19.24		6.52	0	20	5	13	13	Lewis E. Warren.	
Oaks II .....	Georgetown .....	1				92	-20				16.80		8.95	0	17	17	0	8	O. M. Mitchell.	
Pinopolis** .....	Berkeley .....	54	66	75.9	-2.5	90	-20	70	+ 1		21.22	+ 14.94	8.50	0	17	4	1	27	Miss E. P. Ravenel.	
Rimini .....	Clarendon .....	97	2								14.22		2.80	0	14				William B. Wolfe.	
St. George .....	Dorchester .....	109	27	78.7	-2.1	94	-20	67	+ 1	23	21.89	+ 15.88	5.50	0	20	8	7	16	R. S. Weeks.	
St. Matthews .....	Calhoun .....	62	20	79.2	-0.7	95	-20	67	31	24	10.26	+ 4.85	1.72	0	14	1	17	13	J. S. Wainwright.	
Society Hill .....	Darlington .....	192	24	78.4	-1.1	94	-11	62	6	27	19.43	+ 13.24	8.94	0	20	8	5	18	T. S. Lucas.	
Summerville .....	Dorchester .....	75	18	78.4	-1.5	92	-19	64	22	23	17.50	+ 11.48	5.24	0	19	4	24	3	sw. Miss E. H. Gadsden.	
Walterboro .....	Colleton .....	69	13															J. A. Westerberg.		
Whitehall (near) .....	do .....	4																Special Rice Exp. Station.		
Yemassee .....	Hampton .....	24	20	78.2	-2.8	94	-19	66	17	26	13.08	+ 6.33	5.53	0	18	13	2	16	J. G. Huston.	
Division means and extremes .....	extremes .....			78.5	-1.8	97	-4	60	6	*33	17.71	+ 11.85	13.25	0	17	5	12	14	s.	
<i>Western Portion.</i>																				
Aiken .....	Aiken .....	527	55	78.4	-2.8	92	-28	67	+ 2	23	8.47	+ 8.93	1.17	0	22	7	9	15	se. W. M. Brown.	
Anderson .....	Anderson .....	764	20	76.5	-3.2	95	+ 1	63	4	30	11.27	+ 5.35	1.99	0	15	14	0	17	w. H. H. Russell.	
Batesburg .....	Lexington .....	656	27	76.8	-2.9	90	+ 3	65	31	22	10.48	+ 5.05	2.18	0	17	8	7	16	se. E. J. Hite.	
Blairs .....	Fairfield .....	293	13								13.36	+ 8.26	4.25	0	14				J. N. Owens.	
Calhoun Falls .....	Abbeville .....	508	23								15.22	+ 10.48	1.72	0	26				L. M. Parker.	
Caunden .....	Kershaw .....	222	56								14.89	+ 10.04	3.10	0	18					
Catawba .....	York .....	562	12								15.55	+ 9.81	6.60	0	13				W. C. Brown.	
Chappells .....	Newberry .....	402	12								7.86	+ 3.59	1.75	0	15				James C. Paris.	
Clemson College .....	Oconee .....	850	24	76.8	-1.0	88	-3	69	+ 8	18	8.46	+ 3.23	1.64	0	15	9	11	11	J. J. Murray.	
Columbia .....	Richland .....	351	29	78.8	-2.3	92	-3	70	1	21	7.58	+ 1.52	2.26	0	19	2	10	19	U. S. Weather Bureau.	
Edgefield .....	Edgefield .....	2									5.73		1.70	0	9				J. A. Townsend.	
Gaston Shoals II .....	Cherokee .....	680	3								17.65	+ 9.67	6.42	0	19				Harry A. Parshall.	
Greenville .....	Greenville .....	989	23	77.4	+ 1.0	95	-3	65	1	28	12.12	+ 6.70	3.50	0	23	7	14	10	sw. J. H. Woodside.	
Greenwood .....	Greenwood .....	671	27	76.6	-3.4	92	-2	66	+ 3	26	10.79	+ 5.70	3.08	0	22	9	0	22	M. M. Calhoun.	
Heath Spring .....	Lancaster .....	568	15	75.4	-5.0	90	+ 3	91	11	23	11.79	+ 7.54	5.27	0	13	3	21	7	w. J. Marvin Bowers.	
Kershaw .....	Kershaw .....	500		77.6		93	-3	64	6	24	10.79		5.73	0	17	20	3	8	se. John W. Hamel.	
Landrum .....	Spartanburg .....	1063	1	75.6		91	-31	61	13	28	20.80		3.10	0	20	7	10	14	R. Hartwell Wilds, D.D.S.	
Liberty .....	Pickens .....	909	17	77.8	-1.4	92	+ 2	66	11	22	10.69	+ 4.89	3.04	0	18	1	25	5	sw. John T. Boggs.	
Little Mountain .....	Newberry .....	711	23	78.5	-1.9	96	-4	68	+ 2	28	13.03	+ 8.29	2.26	0	16	3	12	16	sw. J. M. Sease, M. D.	
Meriwether .....	Edgefield .....	450	13	b76.8	-3.4	b9	-3	b67	+ 27	9.08	+ 4.13	1.74	0	15				William S. Middleton.		
Monetta .....	Saluda .....	400	9	78.4		93	+ 4	68	+ 1	24	8.03		2.32	0	17	0	20	11	s. Joseph M. Johnson.	
Mountain Rest .....	Oconee .....	1380	72.8			87	+ 17	61	27	25	24.45		4.98	0	22	3	14	14	J. H. Brown.	
Newberry .....	Newberry .....	502	13	78.8	-2.0	99	-3	62	1	34	12.22	+ 7.78	3.10	0	21	0	9	22	Warren G. Peterson.	
Pelzer .....	Anderson .....	850	12								12.04	+ 6.74	1.84	0	19				Joshua Y. Jones.	
Saluda .....	Saluda .....	536	15	78.0	-2.5	93	+ 3	65	31	27	7.79	+ 3.58	1.10	0	23	11	3	17	s. Mrs. F. V. J. Maxwell.	
Santuck .....	Union .....	512	23	78.3	-1.3	96	-3	66	+ 1	32	10.23	+ 5.28	3.16	0	19	2	16	13	sw. E. W. Jeter.	
Spartanburg .....	Spartanburg .....	875	13	77.6	-1.4	91	+ 2	65	+ 1	23	15.48	+ 11.18	4.50	0	16				F. P. Robinson.	
Trenton .....	Edgefield .....	620	27	77.7	-2.8	92	-1	67	+ 2	28	7.91	+ 2.26	2.56	0	12	3	19	9	sw. Mrs. S. E. Long.	
Wallalla .....	Oconee .....	1061	13								14.53	+ 8.57	3.01	0	21	1	20	10	sw. H. W. Branch.	
White Oak .....	Fairfield .....	548		78.4	-1.2	94	-13	65	1	32	16.05	+ 11.14	6.02	0	13	6	14	11	se. T. G. Patrick & Co.	
Winthrop College II .....	York .....	690	17	76.0	-3.9	92	+ 3	60	60	27	15.65	+ 10.76	4.00	0	13	4	19	8	sw. W. P. Goodman.	
Division means and extremes .....	extremes .....			77.2	-2.2	99	-3	60	60	+ 6	34	12.26	+ 7.88	6.60	0	18	6	12	13	sw.
State means and extremes .....	extremes .....			77.8	-2.1	99	-3	60	60	+ 6	34	14.69	+ 8.87	13.25	0	17	5	12	14	sw.

The departures from the normal temperature and precipitation are computed only for such stations as have ten or more years of record, but all complete reports are used in determining section or division means. Reference letters (a, b, c), appearing in the table indicate number of days missing; for example, b represents two days missing, etc.

† Also on other dates. †† Received too late to be included in means and summaries. \*\* Temperature data are from observed readings of the dry bulb; means are computed from observed readings. Postoffice addresses of these stations are as follows: Of Edisto, Embree; of Gaston Shoals, Gaffney; of Winthrop College, Rock Hill.

T. Precipitation is less than 0.01 inch of rain or melted snow.

**Daily Precipitation for July, 1916.**

Except as otherwise indicated, observations are generally made late in the afternoon, near sunset, and precipitation recorded is for the 24 hours ending at the time of observation.  $\dagger$  Precipitation measured in the morning; amount then recorded is for the preceding 24 hours.  $\ddagger$  Regular Weather Bureau station; precipitation is for the 24-hour period, midnight to midnight. \* Precipitation included in the next following measurement.  $\ddagger$  Separate dates of falls not recorded. T. Trace, or less than 0.01 inch.

#### **COMPARATIVE DATA FOR JULY.**

## Daily Temperatures for July, 1916.

Stations.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Mean.	
<i>Eastern Portion.</i>																																	
Allendale $\frac{W}{S}$	91	88	94	93	87	85	80	82	80	89	90	91	88	81	89	89	89	91	94	93	89	86	84	85	85	83	85	91	92	88	88	87.7	
	70	69	70	72	71	72	70	71	72	72	79	72	72	70	74	71	69	70	71	72	72	73	71	70	71	72	71	72	71	70	71	71.4	
Beaufort	Maximum	93	92	92	91	81	88	81	81	83	89	94	93	90	81	91	89	91	94	96	94	90	85	82	85	84	84	85	94	89	87	88.5	
	Minimum	70	67	69	71	70	70	69	69	69	71	69	71	71	70	72	70	70	73	69	70	71	71	72	71	71	72	70	68	70.0			
Blackville $\frac{W}{S}$	Maximum	92	91	92	93	90	85	84	80	79	85	91	92	80	76	82	85	89	90	91	92	91	88	84	85	84	85	82	92	90	89	90	87.0
Bowman	Minimum	65	66	70	71	70	69	68	66	70	71	70	70	69	69	69	69	70	70	69	70	70	70	71	70	69	70	68	70	69	69.3		
Centenary	Maximum	90	93	93	93	88	88	87	85	83	87	91	92	86	77	82	85	89	87	91	87	86	85	82	84	83	80	85	90	87	86	86.7	
	Minimum	68	68	70	71	69	67	65	63	71	69	73	71	72	75	72	71	69	74	69	73	72	72	72	71	69	72	71	70	71	70.4		
Charleston	Maximum	84	86	89	90	81	82	82	82	85	87	85	83	80	82	83	84	86	92	93	88	85	87	83	83	80	82	84	84	84	84.3		
	Minimum	72	74	72	72	72	74	77	76	76	78	78	76	71	74	76	74	73	75	75	73	72	74	76	71	74	76	73	74	73	73.9		
Cheraw $\frac{W}{S}$	Maximum	88	90	89	87	87	85	80	81	87	92	91	91	73	77	82	87	89	85	84	82	84	80	80	82	80	82	86	86	86	85.1		
Bowman	Minimum	67	70	68	65	60	65	66	60	66	70	71	73	71	70	72	72	70	73	72	70	70	73	72	71	69	68	69	68	69	69.3		
Conway $\frac{W}{S}$	Maximum	87	82	86	85	83	81	79	85	78	82	83	83	79	77	82	87	85	88	81	79	78	79	81	82	80	82	80	82	83	82.5		
	Minimum	68	70	71	74	70	67	65	65	75	70	71	70	74	73	74	73	71	73	74	73	72	73	74	71	73	72	73	71	71.4			
Darlington $\frac{W}{S}$	Maximum	90	92	90	87	88	87	82	82	90	84	89	76	81	88	88	90	92	91	86	84	81	85	87	87	85	86	84	85	86	86.4		
	Minimum	69	69	72	68	64	65	65	65	70	71	71	72	72	73	72	71	71	69	69	70	72	73	71	70	68	67	67	67.0				
Dillon	Maximum	86	90	91	91	87	87	89	81	87	92	91	85	86	84	88	88	91	90	86	84	81	80	82	80	84	87	87	86	86.2			
	Minimum	68	70	71	71	79	65	66	64	69	71	71	73	72	75	72	70	69	73	74	73	72	74	70	68	67	67	67.5					
Ferguson $\frac{W}{S}$	Maximum	90	89	90	88	85	85	86	85	89	90	91	91	85	86	89	89	89	91	85	86	84	84	86	85	86	85	86	85	86	87.1		
	Minimum	72	74	76	76	76	76	76	76	76	76	76	76	74	74	74	74	74	74	74	72	72	75	75	75	75	75	75	75	75	75.9		
Florence 1 $\frac{W}{S}$	Maximum	94	93	93	97	89	91	88	85	81	89	96	85	74	82	81	90	92	95	91	82	78	81	70	70	70	70	70	70	70	70	70.5	
	Minimum	69	71	70	73	68	67	66	65	70	70	74	70	72	74	71	72	72	70	73	71	70	72	72	72	72	72	72	72	72	72.0		
Georgetown	Maximum	89	85	90	91	89	85	85	85	91	90	90	90	84	81	85	85	86	90	91	94	94	90	85	85	85	85	85	85	85	85	85.0	
	Minimum	70	73	72	76	71	72	67	67	76	71	72	72	76	74	70	72	71	67	73	72	72	72	72	72	72	72	72	72	72.0			
Kingstree $\frac{W}{S}$	Maximum	91	91	92	94	88	87	86	86	88	89	91	87	77	83	80	90	91	90	89	87	81	83	86	87	87	87	87	87	87	87.7		
	Minimum	67	71	69	73	71	70	66	68	71	71	74	70	73	72	71	72	71	71	73	72	72	71	70	71	71	71	71	71	71	71.7		
Mayesville (near)	Maximum	92	94	94	93	87	88	86	83	81	83	93	88	85	80	87	88	89	89	90	96	87	81	83	87	91	83	87	85	85	87.5		
	Minimum	69	67	69	67	66	67	66	65	69	70	71	71	71	70	71	71	71	71	71	69	70	71	70	70	70	70	70	70	70	69.7		
Oaks	Maximum	87	89	89	90	86	85	83	85	80	87	88	84	75	83	83	90	90	90	92	89	86	88	85	84	85	84	85	85	85	86.7		
	Minimum	90	89	91	90	87	85	80	79	80	89	91	92	85	77	86	89	90	91	93	94	87	87	86	85	85	85	85	85	85	85.7		
St. George $\frac{W}{S}$	Maximum	67	67	69	71	70	70	69	68	71	71	72	70	70	69	71	70	73	73	71	71	70	70	71	70	70	70	70	70	70	70.5		
	Minimum	93	94	93	87	85	83	78	78	89	93	87	85	76	75	87	88	90	91	90	94	94	87	86	86	86	86	86	86	86	86.5		
St. Matthews $\frac{W}{S}$	Maximum	71	69	70	72	71	71	69	67	71	71	70	71	71	72	73	73	70	70	72	71	72	71	70	70	70	70	70	70	70	70.9		
	Minimum	68	66	66	63	63	63	65	65	66	67	66	67	67	66	68	68	69	69	68	66	67	67	66	67	66	67	66	67	66	67.3		
Society Hill $\frac{W}{S}$	Maximum	67	70	69	70	67	62	65	65	65	69	70	73	71	70	71	71	72	72	72	71	70	70	70	70	70	70	70	70	70	69.5		
	Minimum	69	87	90	91	84	82	80	81	87	90	90	85	75	85	87	89	89	88	87	85	84	82	83	84	85	86	85	86	85	85.8		
Sunnerville	Maximum	67	71	70	73	71	70	69	68	74	74	73	70	69	69	73	73	70	69	69	72	72	73	71	71	72	71	71	71	71	71.1		
	Minimum	70	71	70	73	71	70	69	68	74	74	73	70	69	69	73	73	70	69	69	72	72	73	71	71	72	71	71	71	71	71.1		
Walterboro	Maximum	92	89	92	92	86	85	82	80	80	88	91	87	81	78	87	87	90	92	94	91	92	86	85	85	87	87	87	87	87	87.6		
	Minimum	67	68	67	68	68	69	69	69	69	70	70	68	68	68	70	70	69	69	69	69	69	69	69	69	69	69	69	69	69.9			
Yemassee $\frac{W}{S}$	Maximum	67	68	67	68	68	69	69	69	69	70	70	68	68	68	70	70	69	69	69	69	69	69	69	69	69	69	69	69	69.9			
	Minimum	70	68	67	68	68	69	69	69	69	70	70	68	68	68	70	70	69	69	69	69	69	69	69	69	69	69	69	69	69.9			
<i>Western Portion.</i>																																	
Aiken	Maximum	90	90	89	87	88	86	83	80	79	84	89	90	91	81	89	88	84	90	87	88	80	84	82	81	85	82	88	89	86	86.6		
	Minimum	69	67	68	69	71	68	69	69	67	69	71	72	72	74	74	73	73	71</td														

Comparative Precipitation Data for July, 1916,  
and all Previous Months of Record.

STATIONS	Total, July, 1916.	Previous monthly record			Previous 24-hour record		
		Greatest.	Month.	Year.	Greatest 24-hour rainfall, July, 1916.	Greatest.	Month.
<i>Eastern Portion.</i>							
Allendale	13.75	17.90	Aug.	1898	3.11	7.45	Aug.
Beaufort		24.68	Aug.	1898	10.82	4.93	June
Blackville	13.63	13.62	July	1887	2.00	5.19	1906
Bowman	14.88	12.30	March	1913	2.76	5.19	Aug.
Centenary	16.23	13.58	Aug.	1915	6.75	3.94	May
Charleston	11.61	19.18	Aug.	1885	4.19	9.55	Oct.
Cheraw	15.87	14.41	Aug.	1893	9.38	6.50	July
Conway	13.23	11.85	May	1915	2.60	5.15	May
Darlington	19.83	12.38	June	1907	10.10	8.00	Sept.
Dillon	13.79	10.89	June	1911	7.60	3.69	Aug.
Edisto	14.41	13.40	June	1906	2.20	3.90	June
Effingham	24.95	15.44	Aug.	1893	13.25	4.70	Sept.
Ferguson	27.33	15.35	Aug.	1895	7.52	6.74	Aug.
Florence No. 1	18.05	14.17	Aug.	1893	9.15	4.65	Aug.
Georgetown	20.25	18.45	Aug.	1893	4.75	6.00	*Sept.
Kingstree	31.13	13.96	Aug.	1891	12.60	3.60	Oct.
Marysville (near)	19.24	15.55	May	1915	6.52	5.55	May
Oaks	16.80	10.20	May	1915	8.95	4.43	May
Pineopolis	21.22	18.85	Aug.	1893	8.50	9.13	Aug.
Rimini	14.22	9.90	July	1914	2.80	2.95	July
St. George	21.89	20.45	Aug.	1893	5.50	4.35	Sept.
St. Matthews	10.26	18.25	June	1903	1.72	4.93	Oct.
Society Hill	19.43	12.26	Aug.	1894	8.94	7.17	Aug.
Summerville	17.50	15.42	Aug.	1899	5.24	4.95	June
Walterboro		12.42	June	1906	.....	4.85	Aug.
Yemassee	13.08	12.64	June	1906	5.53	4.75	Sept.
<i>Western Portion.</i>							
Aiken	8.47	12.87	Oct.	1911	1.17	6.10	Aug.
Anderson	11.27	18.39	Aug.	1908	1.99	11.65	Aug.
Batesburg	10.48	13.08	Aug.	1893	2.18	3.53	Aug.
Blairs	13.36	9.88	Aug.	1908	4.25	4.90	June
Calhoun Falls	15.22	14.89	July	1905	1.72	7.00	July
Camden	14.89	14.75	Aug.	1878	3.10	9.05	Aug.
Catawba	15.55	13.04	Aug.	1908	6.60	3.90	June
Chappells	7.86	8.78	Aug.	1913	1.75	4.75	March
Clemson College	8.46	14.29	June	1900	1.64	4.74	July
Columbia	7.58	12.17	July	1898	2.26	4.90	Sept.
Edgefield	5.73	9.19	July	1914	1.70	2.30	July
Gaston Shoals	17.65	9.23	Dec.	1914	6.42	2.77	Dec.
Greenville	12.12	19.52	Aug.	1908	3.50	5.10	Aug.
Greenwood	10.79	15.72	July	1896	3.06	5.70	July
Heath Spring	11.79	12.15	Aug.	1903	5.27	6.50	Aug.
Kershaw	10.79	9.19	June	1916	5.73	4.69	June
Landrum	20.80	8.89	Jan.	1915	3.10	3.37	Dec.
Liberty	10.69	16.26	May	1910	3.04	6.90	May
Little Mountain	13.03	11.38	July	1896	2.26	5.42	July
Meriwether	9.08	9.82	Dec.	1905	1.74	4.00	Dec.
Mouetta	8.03	10.99	Aug.	1908	2.32	4.14	Feb.
Mountain Rest	24.46	10.08	Dec.	1915	4.98	3.70	May
Newberry	12.22	9.54	June	1910	3.10	4.55	Nov.
Pelzer	12.04	11.42	June	1909	1.84	5.46	March
Saluda	7.79	10.60	June	1910	1.10	3.70	Nov.
Santuck	10.23	14.69	Aug.	1908	3.16	6.74	Aug.
Spartanburg	15.48	15.66	Aug.	1901	4.50	5.15	May
Trenton	7.91	14.76	July	1906	2.56	6.07	Aug.
Walhalla	14.53	14.37	Sept.	1906	3.01	8.00	July
White Oak	16.05	b13.32	Aug.	1908	6.02	b6.25	May
Winthrop College	15.65	12.28	Aug.	1908	4.00	5.08	Aug.

\* Also October, 1906. b Winnsboro.

Comparative Crest Stages of Rivers of South Carolina,  
Current Month and Past Records.

STATIONS	WATERSHEDS.	Flood Stage.	Crests of July, 1916, Floods.	Number of Days in Flood.	Highest Previous Crests of Record.		No. of Flood days Previous Floods.
					Fl.	Fl.	
Augusta, Ga.	Savannah	32	28.2	0	38.8	3	
Blairs	Broad	14	36.5	6	31.1	4	
Calhoun Falls	Savannah	15	10.0	0	28.2	1	
Camden	Wateree	24	43.0	16	39.7	5	
Catawba	Catawba	11	40.4	9	28.4	5	
Chappells	Saluda	14	18.8	11	34.7	4	
Cheraw	Great Pee Dee	27	36.4	11	44.3	5	
Columbia	Congaree	15	31.5	6	35.8	5	
Conway	Waccamaw	7	9.2	b22	10.2	15	
Edisto	Edisto	6	6.8	b5	8.5	.....	
Effingham	Lynches	14	18.7	b18	20.0	6	
Ferguson	Santee	12	24.7	b37	23.7	22	
Kingsree	Black	12	15.5	b19	14.5	.....	
Mt. Holly, N. C.	Catawba	15	45.5	3	23.0	.....	
Pelzer	Saluda	7	14.0	10	25.6	3	
Rimini	Santee	12	35.8	b35	33.8	20	

\*—Completed from August records.

Chart Showing Total Precipitation During July, 1916.

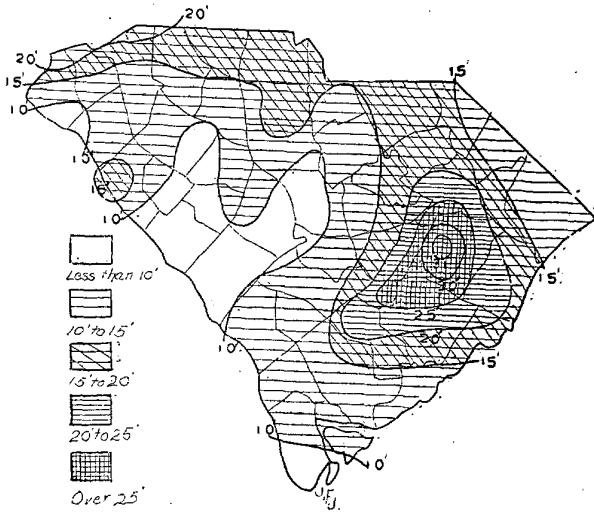
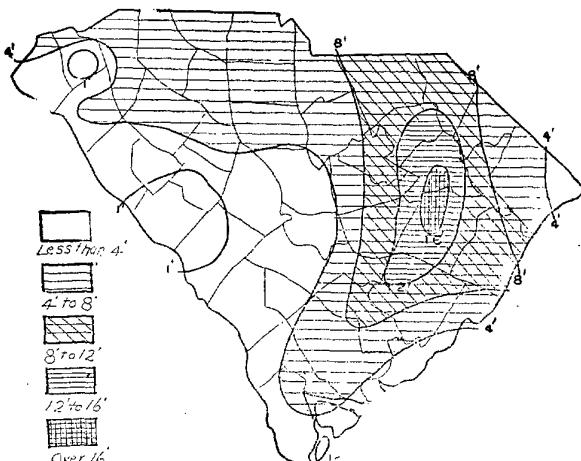


Chart Showing Total Precipitation During Period, July 14 to 18, 1916.



## RIVER CONDITIONS.

(Continued from Page 51.)

July floods were maintained by runoff through the Broad and Catawba-Wateree rivers, while the Saluda was in moderate flood only. Under pressure of the enormous volume of water pushing into the Santee, heavy steel railroad and highway bridges were washed away, and crops were damaged to such an extent that the loss will probably never be fully known. The Pee Dee System was also in flood, due to a part of the same series of rains, and the damage was particularly severe in the Llynches and Black basins, which were overflowed by the heavy up-State runoff in addition to the damage by storm.

In the Santee System the flood area ranged from about 5,000 feet in width in the lower Catawba to a width of 3 to 5 miles in the Santee basin. The damage by floods in the Santee and Pee Dee systems, comprising bridges, roads, crops, etc., at this writing, is conservatively estimated at about \$10,300,000, while movable property estimated at a value of about \$400,000 was saved by timely warnings of the Weather Bureau. In the aggregate, about \$3,200,000 represents the damage in South Carolina, and approximately 700,000 acres of crops were affected.

A table of comparative data for the July, 1916, flood and for previous floods will be found elsewhere in this number, in addition to charts showing the distribution of rainfall for the month and during the period, 14th to 18th.

## MISCELLANEOUS PHENOMENA.

*Fog, Dense (dates).*—Blairs, 31; Centenary, 6; Columbia, 28; Gaston Shoals, 27, 28, 30, 31; Landrum, 19, 20; Liberty, 25, 26, 27, 28; Mayesville (near), 11, 12, 26; Pelzer, 20; Society Hill, 12.

*Hail (date).*—Summerville, 1.

*Halo (dates).*—*Solar:* Mayesville (near), 31; Santuck, 6.

*Tornado (dates).*—Landrum, 15, with little damage and no lives lost; Santuck, 15, unroofed dwelling, with other minor loss.

## ERRATA, JUNE, 1916.

Centenary.—Total precipitation, Pages 44 and 45, should be 3.60.

## MISCELLANEOUS DATA FOR JULY, 1916.

Stations.	Barometer—sea level.	Temperature—degrees Fahr.			Precipitation— inches.	Wind.	Mean relative humidity.	S. a. m.	S. p. m.	Percentage of pos- sible sun-time.
		Mean.	Highest.	Lowest.						
Asheville, N. C....	29.99	72.2	84	61	9.28	2.38	6.0 se.	91	82	31
Augusta, Ga.....	29.98	79.2	92	69	8.26	1.48	5.7 se.	87	84	36
Charleston, S. C..	30.00	79.1	93	68	11.61	4.19	11.2 s.	82	80	56
Charlotte, N. C....	30.01	76.0	89	64	16.55	5.04	9.4 s.	90	80	60
Columbia, S. C....	30.00	78.8	92	70	7.58	2.26	6.7 e.	86	76	34
Savannah, Ga.....	30.00	79.4	93	68	8.27	1.91	10.6 se.	85	84	45
Wilmington, N. C..	30.03	78.1	92	66	10.83	4.94	7.3 s.	85	85	49
Means and ex- tremes.....}	30.00	77.5	93	61	10.34	5.04	8.3 se.	87	81	44